

REMARKS

Claims 8–11, 16–19, 24–27, 32–35, and 40 are pending in this application. By this Amendment, claim 8 is amended, and claims 12–15, 20–23, 28–31, and 36–39 are canceled. Support for the amendments to claim 8 may be found, for example, in the claims as originally filed. No new matter is added.

In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

I. Rejection Under 35 U.S.C §102

The Office Action rejects claims 8–11, 16–19, 24–27, 32–35, and 40 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,372,609 to Aga et al. ("Aga"). Applicants respectfully traverse the rejection.

Without conceding the propriety of the rejections, independent claim 8 is amended to incorporate the subject matter of claim 12. Specifically, claim 8 is amended to clarify that "the thickness of the buried oxide film is reduced to 100 nm or less." The Office Action concedes that Aga does not specifically disclose such a feature, but asserts that the claimed range is *prima facie* obvious, because there is no evidence of record showing that the claimed range achieves unexpected results relative to the range disclosed by Aga. *See* Office Action, at page 4, lines 1–14.

Applicants respectfully submit that a rejection based on an obviousness of ranges is improper. First, Aga does not disclose a range of thicknesses for a buried oxide film. The only value for a thickness of a buried oxide film that Aga discloses is 700 nm. *See* column 9, lines 55–57. Aga does not teach or suggest any specific value or range that overlaps or even approaches the claimed thickness range of 100 nm or less. Instead, Aga only teaches a thickness that is at least seven times the claimed thickness. Furthermore, there is no indication from Aga that the thickness of a buried oxide film is a result-effective variable. A

particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of the variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

Nevertheless, the claimed method produces results that are unexpected from the teachings of Aga. Conventionally, when the production of an SOI wafer having a buried oxide film with a thickness of 100 nm or less is attempted, there have been problems that as the thickness of the buried oxide film becomes thinner, blisters and voids tend to be generated in delaminating heat treatment after bonding wafers, and the production yield is decreased. *See* Specification at page 11, lines 17–25.

In order to solve such problems, after an oxide film is formed so that the total thickness of the oxide film formed on at least one wafer surface of two wafers is thicker than the desired thickness of the buried oxide film in the final SOI wafer, the wafers are bonded to each other and the bond wafer is made into a thin film to form an SOI layer, and thereafter, the obtained bonded wafer is subjected to heat treatment, and the thickness of the buried oxide film is reduced to 100 nm or less. This process results in SOI wafers free of blisters and voids, and the SOI layer exhibits good crystallinity. *See* Specification at page 6, lines 24 to page 7, line 16. Such results are unexpected, and therefore unobvious, from the disclosures of Aga.

Claim 8 also requires that "the oxide film is formed so that a total thickness of the oxide film formed on the surface of at least one of the bond wafer and the base wafer is thicker than a thickness of the buried oxide film that the SOI wafer to be produced has." Aga fails to teach or suggest such a step. Additionally, Aga fails to disclose a step wherein the "obtained bonded wafer is subjected to heat treatment to reduce the thickness of the buried oxide film."

In summary, the subject matter of claim 8 would not have been rendered obvious by the teachings of Aga because Aga does not teach or suggest each and every process step as required by step 8. Furthermore, the assertion of the Office Action that the claimed range of thicknesses of the buried oxide film is *prima facie* obviousness over the range disclosed by Aga is improper because Aga does not disclose a range of thicknesses, and because the thickness of a buried oxide film is not a result-effective variable recognized by Aga.

Aga would not have rendered obvious claim 8. Claims 9–11, 16–19, 24–27, 32–35, and 40 variously depend from claim 8 and, thus, also would not have been rendered obvious by Aga. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

II. Rejection Under 35 U.S.C. §103

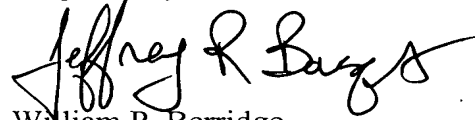
The Office Action rejects claims 12–15, 20–23, 28–31, and 36–39 under 35 U.S.C. §103(a) as obvious over Aga. By this amendment, claims 12–15, 20–23, 28–31, and 36–39 are canceled, rendering their rejection moot. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 8–11, 16–19, 24–27, 32–35, and 40 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Date: December 28, 2006

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